

# PATENT COOPERATION TREATY

From the:  
INTERNATIONAL SEARCHING AUTHORITY

To:  
  
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## PCT

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing  
(day/month/year) **02 MAR 2005**

Applicant's or agent's file reference  
**FP21001**

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No.  
**PCT/AU2005/000042**

International filing date (day/month/year)  
**14 January 2005**

Priority date (day/month/year)  
**15 January 2004**

International Patent Classification (IPC) or both national classification and IPC  
**Cl. 7 C04B 41/45; C08K 3/34, 5/54, 5/541; C09D 183/04, 183/02, 185/00**

Applicant  
**UNISEARCH LIMITED et al**

**1. This opinion contains indications relating to the following items:**

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

**2. FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

**3. For further details, see notes to Form PCT/ISA/220.**

Name and mailing address of the IPEA/AU  
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Box No. I      Basis of the opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.  
☐ This opinion has been established on the basis of a translation from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material  
☐ a sequence listing  
☐ table(s) related to the sequence listing
  - b. format of material  
☐ in written format  
☐ in computer readable form
  - c. time of filing/furnishing  
☐ contained in the international application as filed.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

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**Box No. V** Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

## 1. Statement

Novelty (N)	Claims	YES
	Claims 1-24	NO
Inventive step (IS)	Claims	YES
	Claims 1-24	NO
Industrial applicability (IA)	Claims 1-24	YES
	Claims	NO

## 2. Citations and explanations:

The current application is directed to methods for rendering a microstructures surface, hydrophobic through applying a hydrophobic nanoscale coating thereto and curing said coating thereon, where said coating provides a nano- and micro- scale roughened surface. Additionally there is a method directed to rendering any surface hydrophobic by first treating a substrate surface such that a microstructured surface is developed and then applying to said microstructured surface a hydrophobic nanoscale coating and curing said coating to produce a surface having a nanoscale/microscale roughness.

The problem to solve appears to reside in developing a hydrophobic coating composition utilising factors such as chemical composition and surface roughness - whereby surface energy is lowered and hydrophobicity is imparted to said substrate surface through a change in surface roughness.

It is considered the following documents - which are merely a selection of the many documents that could have been cited against the current application - are relevant to the present invention;

D1 - Derwent abstract 2003-756616/71 (& WO 2003/066241)

D2 - Derwent abstract 2003-533524/51 (& DE 10118348)

D3 - WO 2002/049980 (& US 6800354)

D4 - WO 2001/014497

D5 - US 6287639

D6 - Derwent abstract 2002-539476/58 (& DE 10051182)

D7 - JP 2003-155411 (abstract & JP 2003-155411)

D8 - US 2003/0186066

D9 - US 2002/0059974

D10 - US 6649266

D11 - JP 2003-128991 (abstract & JP 2003-128991)

Each of documents D1-D11 disclose a method of rendering a microstructured surface (includes intrinsically microstructured materials) hydrophobic through applying a hydrophobic nanoscale coating composition thereto. Said coatings primarily comprise tri-functional alkyl silanes and an organic solvent. A selection of D1-D11 further contain a polysiloxane polymer. Each of D1-D11 disclose water contact angles in excess of 90° (ie hydrophobic or super-hydrophobic as the case may be). Furthermore each of D1-D11 typically discloses a sol-gel process to effect the reaction of tri-functional alkyl silanes in forming a hydrophobic nanoscale coating thus ensuring the prescribed surface roughness of the present invention claims.

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**Supplemental Box**

In case the space in any of the preceding boxes is not sufficient.

Continuation of: Box V

It should be noted that documents D5, D7 and D11 do not disclose directly the subject matter of present claims 16-21.

NOVELTY (N) Claims 1-24

The term 'microstructured' is taken in this opinion to include any material surface that is intrinsically or inherently microstructured through the nature of said materials (ie textiles, ceramics, stone etc..) as described by the applicant at pages 19-23 of the current application.

Independent claim 1 defines rendering an already microstructured surface hydrophobic, through a composition capable of forming a hydrophobic coating that imparts a nanoscale roughness thereto. Said coating is then cured permitting said microstructured surface to produce a surface roughness that is both nanoscale and microscale.

Independent claim 16 is directed to rendering any surface hydrophobic, through a composition capable of forming a hydrophobic coating that imparts a nanoscale roughness thereto, by first treating a surface such that the treatment produces a microstructured surface upon which said hydrophobic coating imparting nanoscale roughness is then applied thereto and cured. Again the finished product maintains a nanoscale and microscale roughness.

Consequently documents D1-D4, D6 & D8-D10 anticipate present claims 1 and 16 (and appended claims). Additionally D5, D7 and D11 anticipate present claims 1-15 and 22-24.

INVENTIVE STEP (IS) Claims 1-24

Accordingly, since the disclosure of each of D1-D4, D6 & D8-D10 deprives the present claims of novelty, these documents are also considered to deprive the current application of an inventive step. Similarly, documents D5, D7 and D11 only deprive present claims 1-15 and 22-24 of an inventive step.

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Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

1. Present claims 13-15 are not clear in that I cannot find an antecedent to "*the contact angle of water...*" as defined therein when appended to any of claims 1-12, 1-13 or 1-14 as the case may be.